UTAH DIVISION OF WATER QUALITY
195 North 1950 West
PO Box 144870
Salt Lake City, Utah 84114-4870

Willard Bay Project Proposal Form

Applicant Name: Paul Thompson

Co-Applicant Name(s) (if applicable): Chris Penne

Project Title: Stocking Evaluation of Wiper and Walleye at Willard Bay Reservoir

Agency or Business Name (if applicable):Utah Division of Wildlife Resources (UDWR)

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☐ Individual ☐ Non-Profit ☒ Govt. Agency ☐ Academic ☐ Commercial ☐ Other

1. Estimated Project Costs:

Labor	$14,400 (seasonal/biologist time to collect, prepare, and ID OTC marks)
Materials	$ 350 (for OTC material)
Equipment	$14,000 (includes microscopes and isometric saw)
Administration	$ 2,448 (indirect costs - overhead on labor)
Miscellaneous	$52,500 (includes purchase and shipping of fish)
TOTAL	$83,698

Other sources of project funding:

UDWR*	$40,000	_____	$_____
Source	Amount	Source	Amount
_____	$_____	_____	$_____
Source	Amount	Source	Amount
_____	$_____	_____	$_____
Source	Amount	Source	Amount
_____	$_____	_____	$_____
Source	Amount	Source	Amount

Total project cost including other sources of funding: $123,698
(please include bids for labor, equipment, rentals, etc.)

* UDWR in-kind includes raising wiper to fingerling size at a state hatchery, transport/marking/ stocking of fish, and annual fall gill netting to collect fish

2. Describe the purpose and need of the project:

Willard Bay Reservoir is one of the most visited fisheries in the State of Utah and angling is one of the main reasons that public visit Willard Bay State Park. Of all Utah State Parks centered on a reservoir, Willard Bay had the highest public visitation rate in 2012. Maintaining quality angling opportunities at this water is critical for the Utah Division of Wildlife Resources (Division) to maintain fishing license sales and for Utah State Parks (Park) to maintain their financial objectives for this Park. The three primary fish that the Division manages this water for are wiper, walleye, and channel catfish. To date, wiper have been managed by stocking fish yearly as this is a sterile hybrid predator that must be maintained through stocking and walleye/channel catfish have been maintained through natural reproduction by wild fish.

Due to budget constraints, the Division cannot purchase enough wiper each year to meet the quotas across the state. Because the purchase of wiper fingerlings (2-3 inches in length) is cost prohibitive, the Division purchases wiper as fry where they are raised at a Division hatchery before being stocked. Wiper are difficult to raise to this size because of poor survival and most statewide waters do not receive their desired stocking quota each year, including Willard Bay. Very little is known about wiper survival if they are stocked as fry, however, if the stocking of fry proves to be successful in Willard Bay, the Division could more easily maintain stocking quotas of wiper at this water and across the state. Through this proposal, we propose to purchase 2,000,000 wiper fry for each of three years (2015-2017). During 2015, one half million of these fish will be stocked as fry and 1.5 million will be transported to a Division Fish Hatchery to be raised to fingerling size. Because survival of wiper from fry to fingerling in a hatchery is highly variable, up to 75,000 fingerlings will be stocked into Willard Bay the first year. All wiper will be marked with oxytetracycline (OTC) prior to stockings, which occur in the spring. OTC absorbs into newly forming calcified tissue and will be visible under ultraviolet light as a fluorescent band. This is a commonly used marking technique by fisheries researchers and will allow the Division to distinguish between stocked fry and finglerling wipers when they are captured during annual fall gill netting. The ratio of stocked wiper fry versus fingerling will be adjusted during 2016 and 2017 depending on the survival of each size class of fish as indicated through the fall gill netting. As part of this proposal, we will purchase the OTC marking materials, an isometric saw that will allow us to section ear bones (otoliths), which are the structures that contain the fluorescent bands, as well as microscopes (one dissecting and one fluorescence) to allow the Division to look at the ear bone structures. Note: the only labor requested in this proposal is for technician time to collect, section, and examine otoliths for OTC marks. If we determine that the stocking of wiper fry is successful, this should ensure that Willard Bay will receive the yearly wiper stocking quota and maintain this great sport fishery.

While walleye have been maintained in Willard Bay through natural reproduction/recruitment of wild fish, environmental conditions vary greatly in Willard Bay each year during the spring when walleye spawn. Recent age and growth work completed by the Division has allowed us to determine when entire walleye year classes have failed. Through this proposal, we will attempt to attain up to 5,000,000 walleye fry for each of three years (2015-2017). In 2014, the Division received 1,000,000 walleye fry for Willard Bay from a Colorado hatchery. This hatchery did not charge for the fish, but shipping was over $1,000 for the 1,000,000 fry. The number of walleye fry that the Division will receive from Colorado will vary between 2015-2017 depending on availability, but we hope to secure up to 5,000,000/year to determine if the stocking of this size class can be successful in supplementing the walleye population in Willard Bay. The walleye fry also will be marked with OTC, so when walleye are captured during annual fall gill netting, we will be able to determine what contribution stocked fish comprise as compared to wild produced fish for the 2015-2017 year classes. If the stocking of walleye fry proves to be successful, the Division will be able to stock walleye fry during the years when walleye recruitment has failed, which in turn should stabilize this population and provide much more consistent fishing for this species.

3. Estimated time frame of the project with significant milestones (Note: Project must be completed with final reports filed by January 1, 2018):

All equipment to mark fish, section otoliths, and microscopes to examine otoliths for OTC marks will be purchased immediately if this proposal is funded and when monies are awarded. Wiper and walleye will be purchased, marked, and stocked into Willard Bay during the spring of 2015, 2016, and 2017. During fall gill netting of those same years, otoliths from all wiper and walleye in the appropriate size classes corresponding to the years that these species were stocked will be collected, sectioned, and examined for an OTC mark under microscopes. The final group of fish otoliths examined will be during the fall of 2017, which will allow a final report with three years of data to be completed by January 1, 2018.

4. Describe the location of the project with attached location map, including details on the total area that will be directly enhanced by the project:

The project area will be Willard Bay Reservoir and the entire fishery within this 10,000 surface acre reservoir should be enhanced by this project.

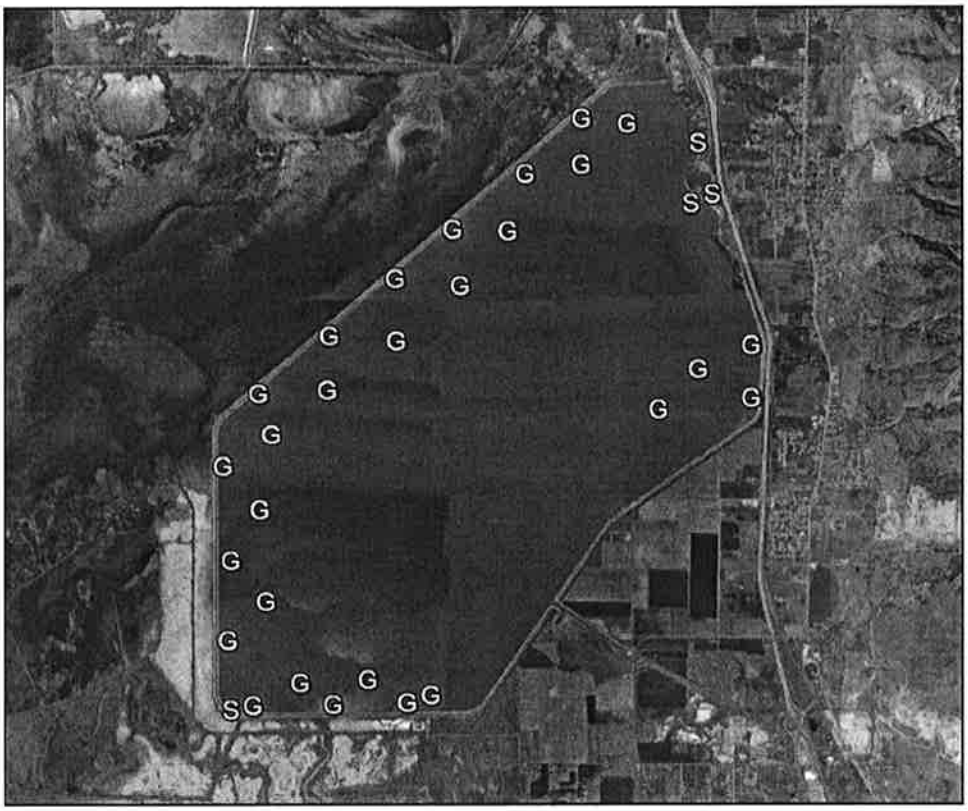

Figure 1.— Fish survey locations at Willard Bay Reservoir in 2013; these are the projected gill net sets (G) for fall gill net surveys during 2015-2017.

5. Describe how the project will specifically enhance and protect waterways affected by the Willard Bay diesel release and improve the conditions of one or more of the following: wildlife, habitat, natural vegetation, water quality or emergency response:

The stocking evaluation of wiper and walleye at Willard Bay Reservoir would directly benefit and enhance wildlife, specifically the fishery, within the reservoir. If the Division can determine that the stocking of wiper fry will be successful at this reservoir, the Division can actually meet the stocking needs for this species at a much reduced cost to the State of Utah. If the stocking of walleye fry proves to be successful, the Division can stock this species during periods of walleye year class failure, stabilizing this fishery, and thus providing a more consistent walleye fishery.

6. Describe project's connectivity to other natural areas or projects that further enhance wildlife, habitat, natural vegetation, water quality or emergency response:

The stocking of fry is much more cost effective and allows managers to obtain the number of fish to stock much more readily than attempting to raise these fish to larger sizes in hatcheries. If the stocking of wiper and walleye fry proves to be successful at Willard Bay, these species could be maintained at other waters across the state at a significantly reduced cost to the State of Utah. The Division is currently working in cooperation with the Park on improving shoreline and boating access at Willard Bay State Park, which would allow more people to enjoy the fishery in this reservoir. The Division is also working on creating additional fish habitat in Willard Bay Reservoir, which would be utilized by the fish being stocked.

7. Describe any additional social benefits of implementing this project:

By maintaining a consistent wiper and walleye fishery at Willard Bay State Park, the angling public will be content and angling pressure may increase allowing the Park to maintain their financial objectives for the Park.

8. Project plans and details, including rights to work on specified piece of land:

All details of this project have been outlined above. The Division has sole authority to manage fisheries in the State of Utah, including Willard Bay State Park.

9. Describe your experience in implementing projects of similar scope and magnitude:

The UDWR has successfully conducted fish marking projects of similar scope and magnitude at Bear Lake and Strawberry Reservoir. This project was developed by Paul Thompson, the Division's Aquatics Manager for the Northern Region and by Chris Penne, the Division's Standing Water Biologist for the Northern Region, in cooperation with Drew Cushing, the Division's statewide Sportfish Coordinator and Craig Schaugaard, the Division's statewide Hatchery Coordinator.

10. Describe how ongoing maintenance of the project will be funded and carried out:

Depending on the results of this project, the management of wiper and walleye in the State of Utah, specifically with regard to stocking, will be evaluated and modified as necessary.

11. List consultants or agency partners that have participated in project development (below):

Name/Company	Address	Phone
Drew Cushing, UDWR	1594 W. N. Temple, SLC, UT 84114	801-538-4774
Craig Schaugaard, UDWR	1594 W. N. Temple, SLC, UT 84114	801-538-4807

Signature Paul Thompson Date 4/21/14
Applicant

Signature Carter R Date 4/21/14
Co-Applicant (if applicable)